U.S. Energy Information Administration

‹ Countries

Thailand

Last Updated: February 20, 2013 (Notes)

full report

Overview

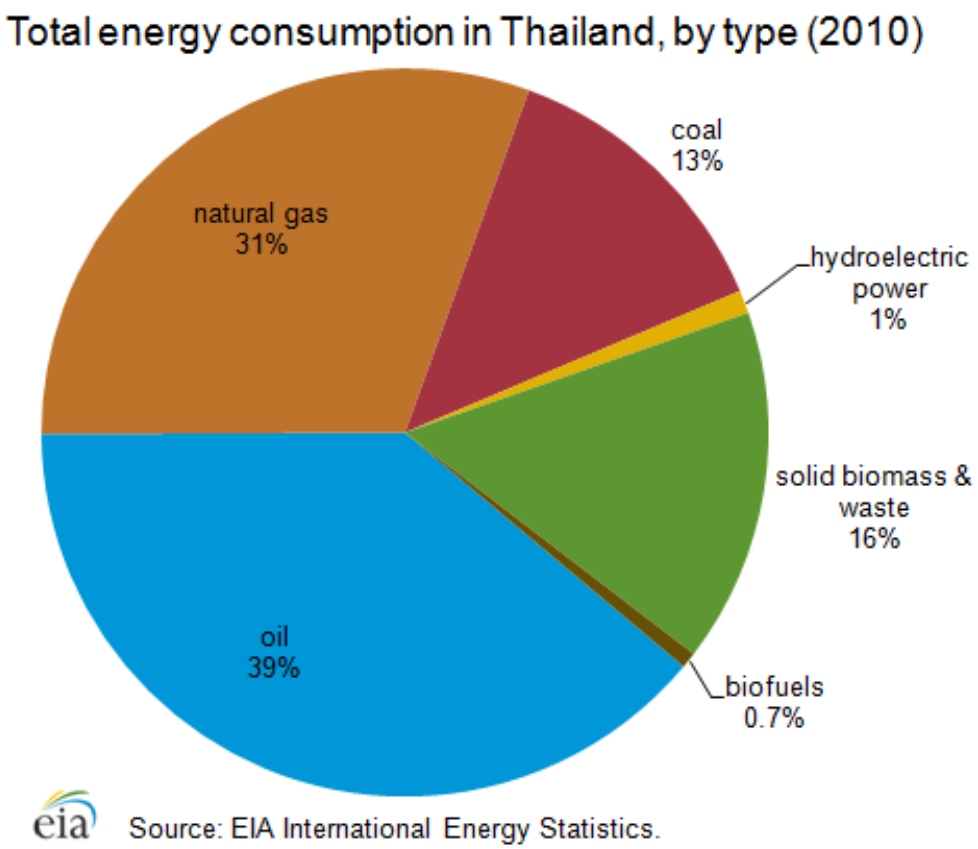
Thailand is a net importer of oil and natural gas, although the country is a growing producer of natural gas.

Thailand has limited domestic oil production and reserves, and imports make up a significant portion of the country's oil consumption. Thailand holds large proven reserves of natural gas, and natural gas production has increased substantially over the last few years. However, the country still remains dependent on imports of natural gas to meet growing domestic demand for the fuel.

In September 2006, a military coup overthrew the government of Prime Minister Thaksin Shinawatra. The change in leadership and subsequent protests have had little impact on oil or natural gas production. Thailand's real gross domestic product (GDP) grew only 0.1 percent year over year in 2011, down from a high growth of 7.8 percent in 2010 due to the global economic recession and extensive flooding during the latter half of 2011. The Thai government forecasts its economy to grow by 5.5 percent in 2012 in anticipation of post-flood reconstruction and higher domestic demand. In turn, oil and gas production and consumption are expected to increase slightly in 2012 and 2013, and industry sources estimate that the first half of 2012 shows a recovery in both oil and gas supply and demand from 2011 levels.

Thailand's primary energy consumption is mostly from fossil fuels, accounting for over 80 percent of the country's total energy consumption. Oil was 39 percent of total energy consumption in 2010, down from nearly half in 2000. As the economy expanded and industrialized, Thailand consumed more oil for transportation and industrial uses. Natural gas has replaced some oil demand and is the next largest fuel, growing to nearly a third of total consumption mix. Solid biomass and waste have played a strong role as an energy source in Thailand and comprise roughly 16 percent of energy consumption. Most biomass feedstock is from sugarcane, rice husk, bagasse, wood waste, and oil palm residue and is used in residential and manufacturing sectors. Thailand has promoted biomass for heat and electricity, though growth has been very gradual due to industry inefficiencies and environmental concerns. Thailand's new Alternative Energy Development Plan calls for renewable energy to increase its share to 25 percent of total energy consumption by 2022 in efforts to reduce dependence on fossil fuels. However, this is an ambitious target requiring significant resource development and subsidies. As Thailand continues to expand economically, it will place greater emphasis on energy supply security by diversifying its fuel slate and promoting upstream development of hydrocarbons including alternatives to

conventional fuels.



Source: Central Intelligence Agency, *The World Factbook*

Oil

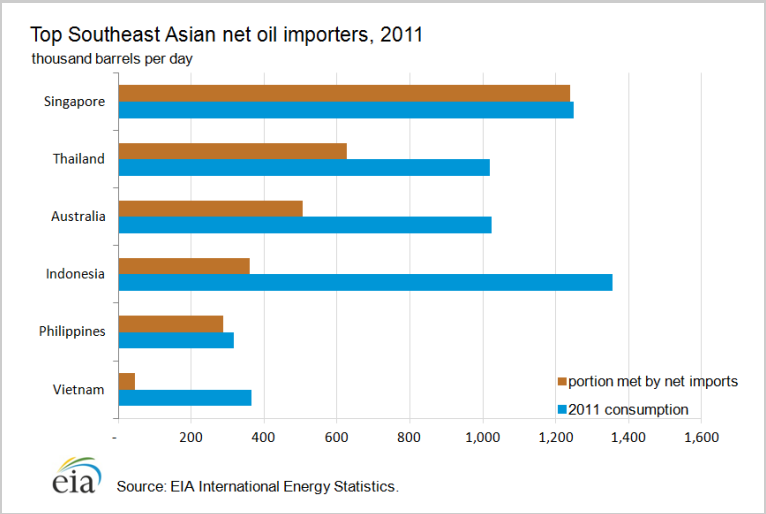
Thailand is the second largest net oil importer in Southeast Asia behind Singapore.

According to *Oil & Gas Journal*,Thailand held proven oil reserves of 453 million barrels in January 2013, an increase of 11 million barrels from the prior year. In 2011, Thailand produced an estimated 393,000 barrels per day (bbl/d) of total oil liquids, of which 140,000 bbl/d was crude oil, 84,000 bbl/d was lease condensate, 154,000 bbl/d was natural gas liquids, and the remainder was refinery gains. Thailand consumed an estimated 1 million bbl/d of oil in 2011, leaving total net imports of 627,000 bbl/d, and making the country the second largest net oil importer in Southeast Asia.

Thailand is a net importer of crude oil and a net exporter of petroleum products. The country imports over 60 percent of its total petroleum needs and almost 85 percent of its crude oil consumption, leaving Thailand highly dependent on global oil markets and volatile prices. About 78 percent of its crude imports originate from the Middle East, while another 8 percent are from other Asian suppliers. The country's oil import dependency has spurred the government to promote the use of other fuels such as natural gas, renewable sources, and biofuels as well as to boost crude oil and product stocks and to encourage investment in

marginal field production.

Thailand's oil products consist primarily of diesel, liquefied petroleum gas (LPG), and naphtha as these fuels feed the transportation, petrochemical, and other industrial, and residential sectors. Diesel fuel makes up about a third of the oil product mix and is a primary fuel for transportation. LPG, which has a 17 percent share of the oil product consumption, is mostly used in domestic consumption for residential cooking, transportation, and the petrochemical sector. Thailand most heavily subsidizes LPG through Thailand's Oil Stabilization Fund, a monetary reserve used to maintain lower domestic retail prices on certain fuels when global oil prices are high, at the expense of taxes on other fuels such as diesel and gasoline sales.



Sector organization

The oil industry in Thailand is dominated by PTT Public Company Limited (PTT), formerly the Petroleum Authority of Thailand. Although PTT is considered a national oil company (NOC), the company underwent a partial privatization in 2001, during which 32 percent of its equity was sold through the Bangkok Stock Exchange. The Ministry of Finance currently owns 51 percent of PTT. However, the government is considering selling 2 percent of its stake to Vayupak Fund, a Thai fund and 15-percent owner of PTT. Reducing the government's stake to 49 percent would allow PTT to exit the state sector and loosen Thailand's hold on the company's finances and operations.

Thailand's oil sector is open to foreign involvement, although foreign companies often work in joint ventures with PTT Exploration and Production (PTTEP), PTT's upstream subsidiary. PTT holds a 65 percent stake in PTTEP, which accounts for 32 percent of the country's domestic oil and gas production. Foreign companies supply the bulk of Thailand's domestic oil production, with Chevron producing almost 70 percent of the oil and condensates production from its offshore fields in 2010. Other players with sizeable stakes include Mitsui, Total, and BG Group as well as smaller independent companies. PTT has a considerable presence in Thailand's downstream sector, with 28 to 49 percent-stakes in five of the country's key refineries as well as equity interests in downstream subsidiaries Thai Oil Company (ThaiOil) and the Thai Petroleum Pipeline Company (Thappline). PPT has a monopoly on natural gas transmission and distribution.

The Energy Policy and Planning Office (EPPO), which is part of Thailand's Ministry of Energy, oversees all aspects of the country's energy policies, including the oil, natural gas, and

power sectors. The National Economic and Social Development Board oversees large energy infrastructure projects and also assists in the policy planning process. The National Energy Policy Council (NEPC) approves all plans. The Department of Mineral Fuels regulates the upstream sector of Thailand's hydrocarbons and is responsible for promoting oil and gas exploration and development including licensing rounds.

The Ministry of Energy is also responsible for the management of Thailand's Oil Stabilization Fund that regulates and, in effect, subsidizes retail and wholesale petroleum product prices. The government is attempting to limit the subsidies for LPG and diesel, but pricing reforms are typically caught between the dual pressures of protecting consumers and industry against inflation and the fund's depletion. As a first step, the government's goal is to raise LPG prices, at least for industrial and petrochemical consumers, as part of pricing reforms.

Overseas E&P

PTTEP plans to increase the company's upstream activities abroad, noting that domestic exploration and production (E&P) potential is becoming increasingly limited. To date, much of PTTEP's overseas investments have focused on other Southeast Asian countries, including Burma, Cambodia, Indonesia, Malaysia, and Vietnam. However, PTTEP has also invested in E&P projects in Algeria, Oman, Kenya, Mozambique, Canada, Australia, and New Zealand.

PTTEP announced in 2012 that the company plans to invest a total of $20 billion between 2012 and 2016. From this amount, capital investments consist of $12 billion, with over 50 percent slated for domestic oil and gas development and the remainder for overseas investments. PTT plans to spend over $3 billion in Burma's upstream and downstream facilities alone. Recent overseas asset purchases include the nearby Zawtika gas field in Burma and an 8.5 percent interest in the Rovuma gas field in offshore Mozambique. Other investments include fields in offshore Western Australia and a stake in the Canadian oil sands operated by Statoil.

Exploration and production

Thai oil production has risen in the last few years, although production remains well below consumption levels. About 80 percent of the country's crude oil production comes from offshore fields in the Gulf of Thailand. Chevron is the largest oil producer in Thailand, accounting for nearly 70 percent of the country's crude oil and condensate production in 2011. The largest oilfield is Chevron's Benjamas located in the north Pattani Trough. The field's production peaked in 2006 and declined to less than 30,000 bbl/d in 2010. Chevron is developing satellite fields to sustain production around Benjamas. PTTEP's Sirikit field is another significant crude oil producer supplying 22,000 bbl/d of oil in 2010. Small independent companies, Salamander Energy and Coastal Energy, began exploring onshore and shallow water fields including Bualuang, Songkhla, and Bua Ban that came online in 2009.

Thailand produces significant amounts of condensate as a by-product of its wet natural gas supply. As development of natural gas expands in the Gulf of Thailand's Pattani Trough, the level of condensate production should be sustainable over the next decade. Chevron carried out further development of the Pailin field which is the largest condensate play in

Thailand, accounting for a quarter of condensate production. Bongkot and Arthit are other major condensate producers in Thailand. New condensate projects include PTT's new Bongkot South field which came online in 2012 and is slated to produce 15,000 bbl/d. Also, Chevron's Platong II project, which came online in 2011, is expected to support 18,000 bbl/d of peak condensate supply.

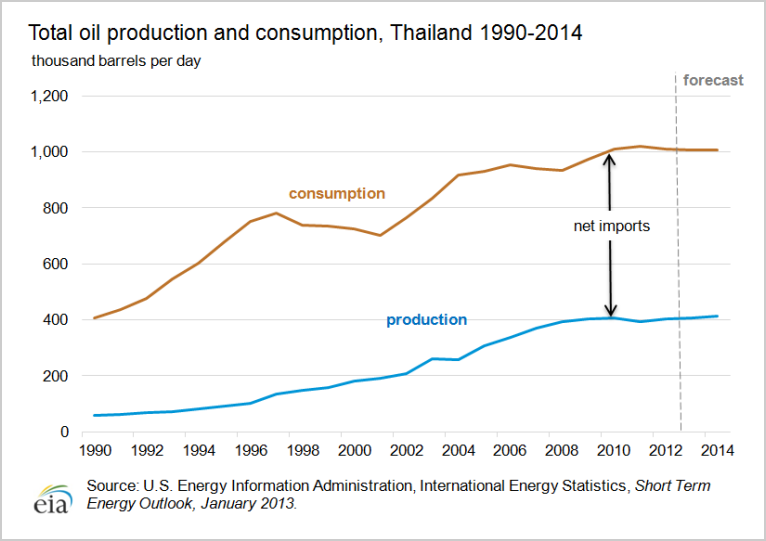
PTTEP and various foreign companies continue to aggressively explore for oil reserves throughout Thailand, although companies have had much more success locating additional natural gas reserves in recent years. Thailand wants to attract more investment in the upstream to meet rising demand for hydrocarbons while trying to boost reserves and production. Thailand plans to hold its 21st upstream licensing round for 22 blocks, of which 11 are located onshore in the Northeast region, 6 in the onshore North-central region, and 5 in shallow offshore waters of the Gulf of Thailand. The round was delayed from the first quarter of 2012 due to the floods several months prior, and it is uncertain when the round will begin.

Biofuels

Thailand is the leading producer of biofuels in Southeast Asia and third only to China and Indonesia in Asia. The government intends to move away from crude oil dependency, particularly in the transportation sector, and the Department of Alternative Energy Development and Efficiency (part of the Ministry of Energy) has actively promoted the use of alternative fuels such as compressed natural gas, liquefied petroleum gas, biodiesel, and ethanol. The biofuels market in Thailand has grown substantially since 2004 when global oil prices began escalating. Thailand's key biofuels are ethanol from molasses and cassava, and biodiesel from palm oil plants. The Thai government currently subsidizes gasohol consumption through its State Oil Fund and approved the phasing out of Octane 91 regular gasoline in favor of ethanol blends in gasoline in 2012. Likewise, on the biodiesel front, the government is introducing pilot projects for various biodiesel blends for trucks and boats and expanding production of palm oil yields.

Although the portion of biofuels is a fraction of total oil production, Thailand's biofuels output was almost 20,000 bbl/d in 2011, rising from a mere 2,400 bbl/d in 2006. In 2011, ethanol consumption rose to 8,960 bbl/d and has increased about four-fold in the past five years. The domestic consumption was 6,375 bbl/d, and as part of Thailand's new 10-Year Alternative Development Plan (2012-2021), the country anticipates consumption climbing to 56,600 bbl/d by 2021. Thailand's ethanol exports to regional sources accounted for about 27 percent of production and jumped dramatically in 2011 as the Philippines and Singapore imported more for gas blending. Thailand anticipates exports to increase to regional markets and plans to designate some export-only ethanol plants.

Thailand is the world's third largest palm oil producer and a leading biodiesel consumer, using nearly 11,000 bbl/d in 2011. All of the country's production feeds consumption, and the government restricts all exports of biodiesel products. Thailand's new alternative energy development plan increased the biodiesel consumption target to 37,550 bbl/d by 2021. A new mandate on B5 biodiesel blend was installed in 2012, and biodiesel intake is likely to increase in the next few years. However, the government prioritizes palm oil for food over fuel use, and biodiesel production will be subject to these demands as well as the ability to boost crops.



Pipelines

Thailand lacks crude oil pipelines, and it relies on several oil terminals and ports as well as floating facilities. PTT's subsidiary, Thai Petroleum Pipeline Company (Thappline), developed the country's main trunk line that runs from the Sri Racha Oil Terminal in the south to the northern Lumlukka and Saraburi terminals. Thappline's oil pipeline infrastructure consists of the 153-mile trunk line and 70 miles of additional local spurs, which most analysts consider inadequate to meet the country's growing oil demand requirements. Thailand does not currently have any international oil pipeline connections.

The Thai government plans to construct an oil pipeline and storage facilities between the Andaman Sea and the Gulf of Thailand in order to facilitate transportation of crude oil imports from the Middle East to Southeast Asia. EPPO ordered a feasibility study for the pipeline project and anticipates the study to be ready by 2013.

Refining

The Thai government is attempting to develop additional refining capacity both to meet expected higher demand for petroleum products domestically as well as to serve export markets in the region. Also, Thailand intends to increase competitiveness and flexibility of its refining sector within the region as well as promote domestic consumption of ethanol and biodiesel for transportation to relieve pressure on crude oil demand and refining. In January 2012, Thailand became the first Southeast Asian country to implement Euro IV fuel standards for reducing sulfur dioxide and other emissions from gasoline and diesel. However, Thailand's plan to become a regional hub for oil refining and trading faces stiff competition from the existing centers in Malaysia and Singapore.

According to industry sources, Thailand has 1.1 million bbl/d of crude refining capacity at eight facilities (six major ones), and many of the refineries have condensate splitters to process the natural gas liquids. PTT owns a majority stake in many of the refining facilities through its subsidiaries, while other private investors own the remaining stakes. Most refineries and petrochemical facilities are located in the Map Ta Phut industrial zone, with the exception of Bangchak Petroleum's refinery located near Bangkok. The largest refinery is the 275,000 bbl/d Sri Racha plant in the Chon Bun province, which is over 49 percent owned by PTT via its stake in the state refinery, Thai Oil Limited. PTT/Thai Oil plans to upgrade its Sri Racha refinery by 2013 so that it can process a wider range of crude oil

grades, including those with higher sulfur content, and comply with the stricter sulfur emissions standards. Thai Oil plans to spend $1.8 billion over the next 5 years for upgrades and expansion of the Sri Racha refinery and its other petrochemical plants. Bangchak Petroleum intends to invest $2.8 billion to expand and upgrade its refinery over the next several years, and some of this investment may be slated to repair damage to one of the units from a fire in 2012.

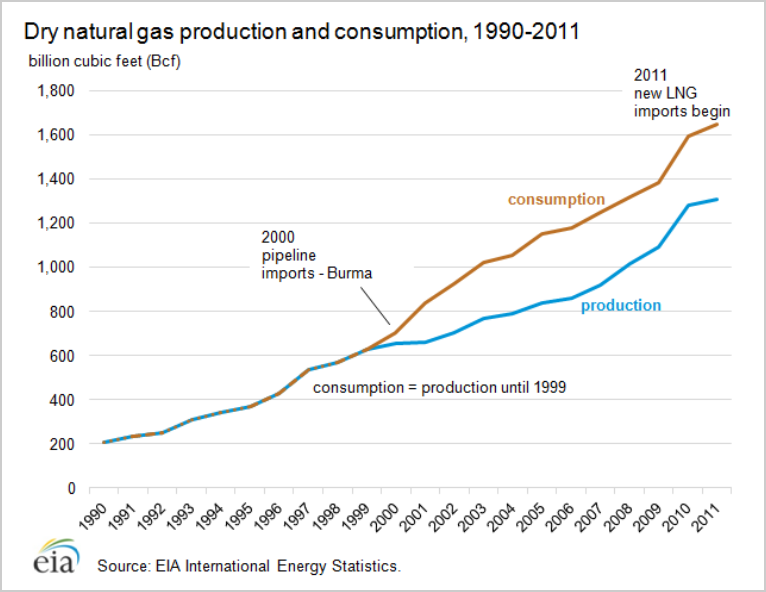
Natural gas

Several new projects will increase natural gas production in Thailand, but the country is still considering various natural gas import schemes to meet growing domestic demand.

According to *OGJ*, Thailand held 10.1 Trillion cubic feet (Tcf) of proven natural gas reserves as of January 2013, and reserves have experienced a general decline over the last few years. Almost all of the country's natural gas fields are located offshore in the Gulf of Thailand. Natural gas production has risen steadily in the past decade, although not enough to keep up with the growth in domestic consumption. Thailand is seeking ways to secure gas supplies through greater domestic production, imports via pipeline and new liquefied natural gas (LNG), and overseas upstream investments by PTT.

The Thai government is concerned that domestic production will peak and decline in several years, placing pressure on the country's energy security. The Energy Ministry expects gas production to peak in 2017 and deplete by 2030 at current production levels and with no reserve additions. Thailand is keen to boost domestic natural gas supplies by slowing declines at mature fields and promoting exploration of technically challenging fields through licensing rounds.

Dry natural gas production and consumption were on par until consumption began to outstrip production in 1999. Thailand produced 1,306 billion cubic feet (Bcf) and consumed 1,645 Bcf of natural gas in 2011, resulting in net imports of nearly 340 Bcf. These imports came from offshore fields in Burma sent via pipeline. Both production and consumption have doubled since 2000, and each grew more than 15 percent between 2009 and 2010. Thailand produced and consumed natural gas at a slower rate in 2011 following disruptions from an offshore gas pipeline leak and massive flooding that began in mid-2011. These disruptions affected primarily the power sector and manufacturing activities, and annual growth slowed to 2 percent for gas production and around 3 percent for consumption in 2011. As production declines in older fields, Thailand could depend more heavily on imports if no significant discoveries are made over the next decade.



Demand

The power sector currently accounts for about 60 percent of overall natural gas demand, though its share has gradually declined from above 80 percent before 2000 as other sectors have grown rapidly. The power sector is dependent on gas as a fuel, with gas-fired stations supplying 71 percent of Thailand's domestic generation in 2011, down from 76 percent in 2010 according to EPPO. The Thai government projects natural gas demand to climb to 2,555 billion cubic feet per year (Bcf/y) by 2022, growing 1.5 percent per year if gas-fired power generation continues to be the dominant fuel. See the electricity section for more detail.

As the power sector's share of natural gas has declined over the past decade, other industries have picked up market shares. According to EPPO, gas separation facilities are the second largest gas consumer group rising to about 21 percent of the gas market in 2011. These facilities process gas for petrochemical consumers. The industrial sector, holding about 14 percent of the natural gas market, has increasingly used gas for its operations especially in the past decade. Thailand began promoting use of domestic natural gas resources for its growing transportation sector in 2004 through retail price controls, and currently natural gas vehicles consist of over 5 percent of natural gas demand.

Sector organization

PTTEP has a stake in many of Thailand's natural gas producing fields, including Bongkot, the country's largest. Foreign companies, however, supply the bulk of Thailand's natural gas output. Chevron is the largest foreign operator of oil and natural gas production, accounting for about 316 Bcf/y of net gas production from 19 offshore blocks in 2011. Chevron intends to invest more than $3 billion on oil and gas field development between 2011 and 2020. PTT has a leading position in mid- and downstream natural gas activities, including Thailand's domestic transmission and distribution infrastructure.

The National Energy Policy regulates the domestic natural gas retail prices in Thailand which are below the international market level. Retail consumers are charged a pooled price based on weighted-average producer gas prices indexed to fuel oil prices and economic indicators. Imported gas prices generally run higher than locally-produced gas,

and LNG prices are the most expensive. So, the government pools the prices based on two tiers, one including import and domestic prices and the other including only weighted-average domestic production prices. As the country imports more LNG to fill the widening gas supply gap, retail prices for the highest paying consumers, the smaller power producers and industrial companies, will increase.

The government moved to increase natural gas prices for vehicles, the lowest paying customers, throughout 2012 and to remove subsidies for the fuel. Public opposition may slow down any incremental price increases on consumers.

Exploration and production

A majority of Thailand's gas production is located in the Pattani Trough in the Gulf of Thailand. PTTEP, alongside foreign partners Total and BG Group, have stakes in Thailand's largest producing field, Bongkot, which has averaged production rates of over 600 MMcf/d for the past several years. Equity partners are drilling more wells to improve and sustain gas production in the field. The Arthit field, located about 350 miles south of Bangkok, commenced operation in 2008 and the adjacent Arthit North came online in 2009. Combined production from the fields ramped up to 500 MMcf/d.

The Malaysia-Thailand Joint Development Area (JDA), located in the lower part of the Gulf of Thailand and northern part of the Malay Basin, is a large contributor to natural gas supplies to Thailand. The area is divided into three blocks, Block A-18, Block B-17, and Block C-19, and is administered by the Malaysia-Thailand Joint Authority (MTJA), with each country owning 50 percent of the JDA's hydrocarbon resources. Production at Block A-18 started in 2005 at the Cakerwala field, and the project's second phase brought on the Bumi, Suriya, and Bulan fields in 2008. Total gas production from Block A-18 is estimated to be 390 MMcf/d. Block B-17 came online in 2009 and was producing 335 MMcf/d in 2010. MTJA plans to sustain this production rate until 2020. The countries signed another agreement for production from the Bumi Bumi field whereas 60 percent of the production will be designated for the MTJDA. Thailand's purchases from MTJDA have propelled to 650 MMcf/d in 2010, and MTJA continues to explore the area for more hydrocarbon discoveries.

There are several ongoing projects that will increase production over the next few years. The consortium at Bongkot began producing gas and condensates at the new Bongkot South field in early 2012. Peak production from the project is expected to add 320 MMcf/d to the original field. Chevron's Platong II project came online in late 2011 and should ramp up to 330 MMcf/d of peak production. The IOC is also part of a consortium developing the Ubon gas and condensate project which could produce hydrocarbons starting in 2016. Estimated production from the project is 130 MMcf/d. There are still some undeveloped fields in the Pattani Trough which could provide more opportunities for exploration.

Thailand's thirst for natural gas is prompting the government to enter political discussions with Cambodia to resolve claims over the overlapping territory between the two countries. According to industry estimates, the overlapping region could hold over 6 Tcf of gas and over 350 million barrels of condensate, but there are no official reserves yet reported. The countries held informal talks in September 2012. The negotiations could take several years.

Pipelines

Although, Thailand's oil pipeline system is rather limited in scale, the country's natural gas

transmission infrastructure is much more advanced. PTT Natural Gas Distribution (PTTNGD) currently has 2,434 miles of total natural gas transmission and distribution pipelines throughout the country. The 1,972-mile offshore transmission system links fields in the Gulf of Thailand to the country's six gas separation plants supplying gas by-products to petrochemical facilities and other markets. The 764-mile onshore portion consists of both eastern and western sections linking the gas separation plants and gas from Burma to power facilities. The Ratchaburi-Wang Noi transmission pipeline connects the eastern and western pipelines.

Thailand has two major natural gas pipelines linking the offshore Erawan field with industrial centers in the Map Ta Phut area in Rayong, with a combined capacity of 2.65 billion cubic feet per day (Bcf/d). PTTNGD constructed a third major natural gas pipeline pumping natural gas from the Arthit field once it came online to the Rayong province. The trunk lines running from the Erawan field also connect with Thailand's production at the MTJDA fields. Most of Thailand's onshore gas pipeline network is located around Bangkok to feed the electric facilities in that region.

PTT plans to expand its gas network to meet the ever-increasing demand, and the company has three projects underway. The Rayong-Kaengkhoi pipeline is slated to come online in 2013 with a capacity of 1.4 Bcf/d and serve facilities in the North. The pipeline will transport the new LNG to the other gas transmission lines. Two other pipelines are scheduled for completion by 2014.

Pipeline imports

Thailand supplemented its domestic production with pipeline imports from fields offshore of neighboring Burma beginning in 1998. Thailand has two natural gas import pipelines transiting gas from the Yadana and Yetagun fields in the Andaman Sea offshore of Burma to onshore Thailand and connecting to the Ratchaburi power complex. Thailand imported about 850 MMcf/d of gas from Burma in 2010, serving about 15 to 20 percent of Thailand's gas needs. Pipeline imports surged to a peak of over 900 MMcf/d in 2007, but declined until 2010 as a result of higher domestic production, slightly slower demand growth, and a pipeline leak from the Yetugan field in 2008. The Yadana field produces approximately 780 MMcf/d, and is owned by the following consortium: Total (31.24 percent), Chevron (28.26 percent), PTTEP (25.5 percent), and Myanmar Oil and Gas Enterprise - MOGE (15 percent). The Yadana field produces roughly 500 MMcf/d, and the equity partners are Petrnoas (40.91 percent), MOGE (20.45 percent), Nippon Oil (19.32 percent), and PTTEP (19.32 percent).

PTTEP is partnering with the Burmese national oil company to develop the Zawtika field in Block M9 offshore of Burma. Thailand plans to begin importing 240 MMcf/d of gas from the project in 2013. Burma's own domestic gas needs are mounting, and in 2012, the country revised its gas offtake from 60 MMcf/d in the original sales and purchase agreement to 110 MMcf/d. This change could ultimately affect Thailand's gas deliveries from the field.

Liquefied natural gas

As part of Thailand's efforts to secure more gas supply and supplement the country's pipeline imports from Burma, the country commenced operations of its first regasification terminal at Ma Ta Phut economic zone in the Rayong area in 2011. The terminal has a current capacity of 660 MMcf/d (240 Bcf/y), and PTT plans to double the capacity by 2016,

given the anticipated growth in gas demand. The terminal received nearly 35 Bcf/y of spot cargoes primarily from Peru, Qatar, Nigeria, and Russia in 2011. PTT intends to secure some long-term contracts, and the NOC signed its first Memorandum of Understanding with Qatar in May 2012 to purchase 96 Bcf/y of LNG starting in 2013. Thailand also commissioned its sixth and largest gas separation facility adjacent to the LNG terminal in order to separate condensates from the dry gas supply. The plant has a capacity to process 800 MMcf/d.

Electricity

Thailand's steadily growing electricity generation is highly dependent on natural gas, so the government is seeking ways to diversify fuel sources to include more renewable energy and potentially nuclear capacity in the long-term.

Thailand's rapidly expanding economy over the past two decades has spurred the need for building more generation capacity to keep pace with higher electricity demand. So far, Thailand's installed capacity growth has exceeded its rate of power consumption growth which averaged about 5 percent a year over the past decade. Thailand now has one of the highest electrification rates in Southeast Asia and delivers electricity to nearly all of its population. Concern for electricity supply security and grid reliability has prompted the Thai government to create policies that promote planned capacity expansion, diversification of fuel sources and increase of alternative fuel use, demand-side management, and management of electricity import dependence. Thailand issues 20-year power plans to map out the capacity additions and goals to match the long-term power projections.

Thailand had an estimated installed capacity of 32.4 gigawatts (GW) in 2011, according to EPPO. Natural gas-fired generation consisted of over 60 percent of the capacity mix, with coal and renewable energy making up most of the remaining capacity. In order to meet increasing demand, the government plans to double net electric generation capacity to over 70 GW by 2030 with the largest additions to come from renewable sources and gas-fired plants.

Sector organization

The Electricity Generating Authority of Thailand (EGAT), the state-owned electricity generating company and sole electricity transmission provider, accounts for nearly half of the country's power generation. Thailand awards licenses to private companies to promote competition and attract more investment in renewable energy generation and advanced technology of fossil fuel plants. Independent power producers (IPPs) make up over 35 percent of the generation mix, with GDF Suez as one of the main investors. Other small Thai state power producers or manufacturers that generate less than 300 megawatts account for the remaining portion. EGAT sells and transmits wholesale electricity to Thailand's two distribution authorities, the Metropolitan Electricity Authority and the Provincial Electricity Authority.

Generation

Thailand's net electricity generation increased from around 90 terawatt-hours (TWh) in 2000

to over 152 TWh in 2011. The industrial sector is the primary consumer of electricity and accounts for 46 percent of the market. The residential sector consumes over 22 percent and the small and medium commercial sector accounts for 26 percent of total power generation. The remaining shares include agriculture, government, and other customers. In its latest revision of the 20-Year Power Development Plan (PDP) released in June 2012, Thailand projects that electricity generation will double in size, reaching 346 TWh by 2030. The anticipated growth is prompting the government to ensure electricity supply by expanding capacity and maintaining reserve margins to be no less than 15 percent of the system capacity.

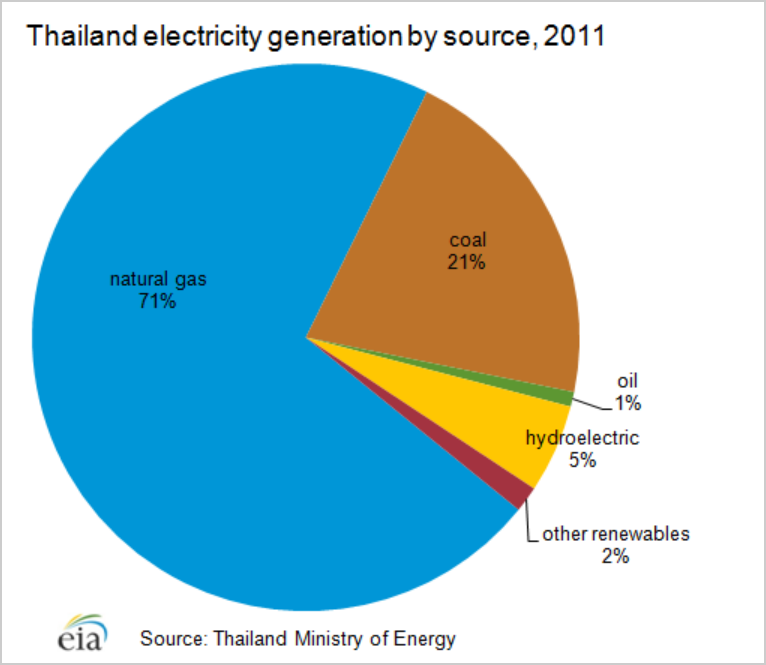
Conventional thermal fuels, particularly natural gas, meet nearly all of Thailand's power requirements. Natural gas-fired generation consisted of 108 TWh or 71 percent of the total electricity supply in 2011 according to EPPO, followed by imported coal and lignite as the second largest feedstock with a 21 percent share. Oil-fired generation, mostly comprised of fuel oil, makes up only 1 percent of the power mix.

Thailand plans to reduce dependence on natural gas for generation in favor of renewable sources and nuclear power. However, the outlook for ramping up these sources is highly tentative. Following Japan's Fukushima incident in 2011, Thailand's first proposed nuclear facility has been delayed to at least 2026 and was scaled back from an originally proposed 5 GW to 2 GW. Also, the existing infrastructure and domestic resources make natural gas the most economic power source. As Thailand ramps up its LNG imports, older gas-fired stations likely will be replaced by newer combined cycle and cogeneration facilities. The government intends to decrease the share of gas-fired generation to 58 percent of the mix by 2030 yet nearly double the absolute generation from natural gas from over 100 TWh in 2011 to about 200 TWh by 2030. Natural gas is likely to continue playing a major role in power generation over the next two decades.

Most of Thailand's renewable power generation is from hydroelectricity, comprising 5 percent of generation or over 8 TWh in 2011. Other key renewable sources include biomass and biogas and made up almost 2 percent of generation in 2011. The revised PDP calls for the capacity of renewable energy from both domestic sources and imports to increase from 6.3 GW in 2011 to 20.5 GW and make up 29 percent of total generating capacity by 2030.

Thailand's electricity imports have more than tripled in the past decade as the country's electricity demand growth continues and as grid interconnections expand. Thailand imported 10.8 GWh of electricity in 2011 from neighboring countries Malaysia and Laos. EGAT currently imports electricity through a 300-Megawatt interconnector with Malaysia to serve the southern provinces of Thailand.

The Association of Southeast Asian Nations (ASEAN) has proposed a regional power grid to enhance electric generation efficiencies across its member countries, increase supplies to meet the region's growing demand, and promote generation from renewable sources. Thailand is strategically located within Southeast Asia to be a conduit for electricity trade in the region.



Notes

- Data presented in the text are the most recent available as of February 20, 2013.
- Data are EIA estimates unless otherwise noted.

Sources

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